Rhodora

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THE PRINGLE AND FROST HERBARIA AT THE UNIVERSITY OF VERMONT.

L. R. Jones.

The past year has been one of unusual prosperity for the botanical department of the University of Vermont, opening with the acquisition by special bequests of some $500 worth of valuable books and closing with the transfer to its halls of the library and herbarium of C. C. Frost, and the transfer and endowment of the Pringle herbarium, the fitting up of a suite of rooms for its reception, and the appointment of Mr. C. G. Pringle as its keeper. Since both the Frost and the Pringle herbaria are unique in character and of more than local significance, some account of their condition and the disposition to be made of them may be of interest.

Charles C. Frost, "the shoemaker botanist" of Brattleboro, Vermont, was well known to the cryptogamic botanists of the middle of the last century, in Europe as well as America. Most of his botanical work was done between the years 1845 and 1875. He was, during this time, in correspondence with the leading cryptogamists of this country and evidently exchanged specimens quite extensively. He gave special attention to various groups of the lower plants, at different times, but his best work was upon the fleshy fungi, in which he was closely associated with Mr. Charles. J. Sprague, Professor C. H. Peck, and others. His most important publication is the cryptogamic portion of the Amherst Catalogue issued in 1875. Since his death, in 1880, his library and herbarium have remained in the possession of his family, who deposited them about 1890 in the public library building in the keeping of the Brattleboro Natural History

Society. An excellent account of the herbarium at that date together with a biographical sketch of Mr. Frost by Professor W. R. Dudley is in the Journal of Mycology II, 114 (1886). Owing to lack of room this Society never was able fully to arrange the collections other than the lichens, which were worked over by Mr. Starrow Higginson in 1891. The Society at last decided, through the especial interest of two of its members, Mrs. Elizabeth B. Davenport and Judge H. H. Wheeler, to recommend the transfer of the entire Frost Herbarium to the University of Vermont. This has been accomplished and the arrangement and cataloguing of the specimens so as to render them accessible to botanists is now under way.

The library includes about one hundred volumes together with a considerable amount of manuscript notes, drawings and correspondence.

Mr. Frost was evidently not a herbarium maker by nature and his collections are not so extensive as his long and active botanical career would lead one to expect. The herbarium includes between 3000 and 5000 specimens of cryptogams so far as can be judged at present, the phanerogamic portion being of minor interest and value.

These specimens are usually not very generous in size and naturally have deteriorated much during the quarter of a century since Mr. Frost ceased to care for them. However, much of historical interest and value attaches to them. This is especially true of the Boleti of which there are a considerable number of type specimens. We hope to be able soon to have the specimens in all the groups so arranged and catalogued as to be easily accessible and will then welcome visits or inquiries from specialists who are interested in them.

No word of introduction is needed regarding Mr. Cyrus G. Pringle or his botanical work. Suffice it to say that, while he is widely known because of his contributions to the herbaria of others, it has been his chief ambition and an important part of his occupation for some thirty years to prepare a herbarium of his own of the best quality and most comprehensive nature possible. It was this desire which first led him into the field explorations in Vermont and later into those more and more extensive collecting expeditions to western America and Mexico which have so greatly enriched most of the large herbaria of the world during the last quarter of a century. His own herbarium has heretofore been kept at his farm home in Charlotte and to its quiet alcoves he has each year returned from his

arduous western and southern journeys there to spend weeks or months, as other duties or season permitted, in its development, care and study. It gradually outgrew his rooms and he decided last winter to accept the invitation, first extended to him some years ago, to transfer it to the University of Vermont and to make that institution his headquarters. This has been done and rooms adequate for the largest probable developments of the next generation are being fitted for its permanent reception. The building in which these rooms are located is a modern brick structure, steam heated, and strictly fire proof. The rooms in preparation will include a main herbarium room about 40 × 45 feet, a store room and a private office and study each about 20 × 20 feet. The herbarium room is lighted from above as well as on the sides and is admirably suited for its purposes. Cases are now being installed capable of holding about 100,000 sheets and there is room for at least as many more without a suggestion of crowding.

The Pringle herbarium now includes about 50,000 sheets, giving the University a total collection to-day approximating 70,000. No statement in figures, however, can give an adequate idea of the relative value of the Pringle herbarium. His aim heretofore has been to make it widely representative of the known species of the world and hence much duplication has been avoided. As a result these 50,000 sheets represent pretty completely. for the vascular plants, the known flora of North America, a large majority of the European species and a good showing from the other parts of the world. Specimens have been added by collection and exchange with much painstaking and discrimination — all except the choicest and most representative being rejected. Those who have seen it and who are competent to pass judgment pronounce it the finest large herbarium in existence. Its further development will remain entirely under Mr. Pringle's direction so that its symmetry and perfection will not be marred.

The friends and alumni of the University upon learning of the prospect of Mr. Pringle's coming to Burlington contributed $10,000 to constitute a permanent endowment fund for the herbarium and associated research work. The University is indebted to the generosity of Dr. W. Seward Webb for $6000 of this amount.

Botanists generally will be concerned to know the effect of Mr. Pringle's associations with the University of Vermont upon his future field work. No demands will be made upon his time or energies by

the University which will interfere in the least with this. He is left, if anything, more freedom than heretofore to pursue his explorations in Mexico or elsewhere. If in years to come he wishes to turn from that work there is provision that he may further develop herbarium or other botanical work at home, but it is distinctly provided that the work at the University is not to interfere with his freedom in his work as a botanical explorer. He is at present in Mexico and will remain there until some time in the autumn. Upon his return the herbarium will be finally installed in its new quarters.

UNIVERSITY OF VERMONT.

AN ALGOLOGIST'S VACATION IN EASTERN MAINE.

F. S. COLLINS.

THE annual meeting of the Josselyn Botanical Society of Maine, in July, 1902, gave me an excellent excuse for visiting some parts of the coast that were outside the range of my previous explorations; the results of the visits were very satisfactory, and as far as they include new algae or critical matters in regard to already known species, will probably be published a little later; the present article is intended to give a more general account of the algological character of the places visited.

The first point at which collecting was done was Cutler, very near the eastern boundary of the United States. The attractiveness of this place, and the curiously boreal character of the land flora are known to the readers of RHODORA from the interesting account by Dr. Kennedy of his visit in 1901.[1]

The place is everyway as attractive as represented, and the northern character of the marine flora is marked. Arctic and subarctic marine floras are characterized by many individuals, often of large size, but of comparatively few species. The flora of the Cutler shore was of this character, but owing to the considerable variety of stations — exposed coast, quiet harbor, and salt marsh — the number

[1] RHODORA, Vol. IV, p. 23.

of species represented is relatively large. Specially noticeable here was the *Laminaria* formation, near and below low water mark. *Laminaria stenophylla* occurred here in a considerable colony just at low water mark, on a smooth, steeply sloping rock, exposed to the full force of the waves. At the time I discovered this colony the sea was exceptionally quiet, and I secured as much as I could take away in my bag. When I returned for more, the next day at low tide, the waves were washing up on the place where I must stand. Any good botanist would cheerfully take a drenching for the sake of a good specimen, but in this case not merely a drenching but a carrying out to sea was fairly likely, and the needed specimens had to be given up.

. *Chorda tomentosa* was abundant in the harbor, growing in pretty deep water, and stretching along the surface at low tide, as *C. Filum* does in most places. The plant is not uncommon all along the New England coast, but a plant two feet long is a large specimen, usually; the original description by Areschoug says "Planta usque metrum longa"; but here, growing in dense tufts, the plants often become 15 feet long, and with dense hairs standing out appear as stout as one's finger.

Another plant occurring here in individuals of unusual size was *Ilea fulvescens*. It is a common species in its special habitat, but usually in fronds so small as to be noticeable only in the mass. Here it had the habit of *Enteromorpha intestinalis*, and fronds over a yard long and half an inch in diameter were found. It seems to occur only where it can have alternately fresh and salt water; the Cutler locality is exceptionally favorable, at the mouth of a considerable brook. At low tide the stream runs briskly over the stones on which it grows; at high tide they are under several feet of salt water. *Ilea fulvescens* is nearly related to *Enteromorpha*, in which it has sometimes been included; it is chiefly distinguished by the very gelatinous cell wall, the cells arranged in distinct groups of fours. These characters seem to be connected with its peculiar habitat, and occur in other plants exposed to fresh water, *Monostroma quaternarium*, for instance, otherwise hardly distinguishable from the marine *M. latissimum*. These characters of gelatinous membrane and cells in groups of fours appear in a still greater degree in the genus *Tetraspora*, common in fresh water everywhere, but not found in the sea.

Plumaria elegans grew here in luxuriant specimens, on shaded perpendicular or overhanging rocks, sometimes five or six feet above low water mark. I have never found specimens of such large size on the Massachusetts coast, where the plant grows in similar stations, but large specimens are abundantly washed ashore at Newport, Rhode Island, though the plant is never found attached above low tide level. And during more than twenty years collecting, I have never seen a specimen washed ashore, north of Cape Cod.

Machias, where the Josselyn Society meeting was held, is not a station for marine algae, but excursions were made to two points on the shore, Roque Bluffs and Point of Main, including a visit from the latter to Starboard Island. In crossing the bar which at low water makes a peninsula of the island, I saw plants of *Laminaria platymeris* growing on rocks and large pebbles, in some cases with stipes so short that the lamina seemed sessile. As noted by Setchell[1] this plant, on the Massachusetts coast, is usually epiphytic on larger Laminarias, but along the eastern half of the Maine coast it usually grows on stones. What is commonly known as *Delesseria alata* was found in some abundance at Starboard Island, washed up from below low water mark; the plants quite luxuriant. On the American coast this species seems specially a northern plant, growing smaller as we go south, seldom occurring south of Nahant. In Europe what passes for the same species is most luxuriant in the English Channel, in company with species here found only south of Cape Cod, and others not found north of North Carolina. It may be that the European and the American plants are distinct.

Rhodophyllis dichotoma has been reported from New England only from Cape Ann and Marblehead. As it occurs at Greenland and Labrador, it might be expected anywhere on the Maine coast, but it was interesting to have its presence there established by specimens in the collection of Miss Lucy Longfellow of Machias, secured at some of the islands near by. When at Portland, the week following the meeting, I found specimens in the collection of the Portland Natural History Society, gathered in Portland harbor, by the late C. B. Fuller, then curator of the society.

The relations between things apparently distinct are sometimes important. If the steamboat wharf at Machiasport had not been

[1] RHODORA, Vol. II, p. 143.

burned, the steamer Frank Jones would not have made Jonesport the eastern terminus of the route; I should not have been compelled to pass Sunday at Jonesport to connect with the boat on the trip west, and should have failed to collect two plants new to New England, namely: *Plectonema Battersii*, one of the blue greens, the lowest of the algae, with filaments a little over one twenty thousandth of an inch in diameter; and *Porphyra amplissima*, a handsome red alga, with fronds a yard long and a foot wide. Both of these I found at Brownie Island, some seven miles south of the town.

The last few days of my vacation were spent at South Harpswell, where Tufts College has a biological Laboratory, and where the study of botany is kept up as well as that of zoology. A notable feature here is the abundance and size of *Laminaria longicruris*; plants with a length of thirty feet were abundant, the stipe reaching a length of eighteen feet, the blade of twelve, the width of the blade being three feet. The upper part of the stipe in this species is quite stiff, with a peculiar twist at the base of the blade; the plant usually grows where, at low water, the depth is less than the length of the stipe; and at low tide there projects above the surface of the water the loop formed by this twist in the stipe. It is the only American species having this character, which is, however, found in some European species. We have one form with equally stiff stipe, *L. digitata*, var. *typica*, but it grows in too deep water to be ever exposed.

While in many cases the long stipes of *Laminaria longicruris* were quite smooth and bare, in others they bore abundant crops of smaller epiphytic algae, of several species. What appeared to be a form of *Polysiphonia violacea* was not uncommon; on a single specimen of the *Laminaria* I found enough of this to mount over two hundred fine specimens. On some plants of the *Laminaria* different species were found on different parts of the stipe; *Porphyra miniata* near the base, then *Antithamnion boreale*, *Polysiphonia violacea*, and near the surface level, *Ceramium rubrum*. *Antithamnion boreale* had hitherto been known in New England only by two or three minute specimens, but on a single plant of Laminaria I found enough for over a hundred excellent specimens. Unfortunately I did not recognize the species at the time, but took it for the well known *A. Pylaisaei*; I had no need for the latter, but mounted some forty specimens, just because they were so handsome; then I threw away

the rest of the material, and only weeks after, when I had returned home, did I find my mistake. It was then too late to complete the set I would gladly have for distribution on the Phycotheca Boreali-Americana.

A very interesting locality at South Harpswell is the old and long abandoned tide-water grist mill. The dam has been broken through, and the water from the basin above rushes wildly through the opening. When the dam was intact, the water in the basin must have been quite warm in summer, but now the sea flows into it at every tide, and there is not much noticeable difference in temperature. I found specimens of *Mesogloia divaricata*, *Polysiphonia Olneyi* and *Cladophora expansa*, characteristic species of warm basins, but none of the specimens were large and they were probably the last survivors of the warm water flora that must once have been there. The old mill is mounted on piles, and these, with cross beams and braces, are quite covered with animal and vegetable life. The shade, and the alternate exposure to air and to rushing water, give conditions favorable to some of the *Chlorophyceae* and *Cyanophyceae*, which grow here in abundance. *Calothrix pulvinata*, for instance, usually a scarce plant north of Cape Cod, was abundant and luxuriant.

At each place where I did my collecting, the harvest was such that I would gladly have spent my whole vacation there; and had it not been for the unusually fine weather, much of what I collected could not have been preserved. As a rule, when one has abundant material to preserve, the weather will keep the driers moist and the specimens will spoil; but this time every day the driers could be spread out in the sunshine, and be ready for use again in an hour.

Through Dr. Kennedy's paper, or in some other way, the inhabitants of Cutler had a juster sense of the value of botany than is usual in most towns, and the botanist on his rounds was an object of admiration rather than of suspicion or pity; only the smallest boys ventured to ask, in regard to the plants gathered, "What use are they, anyway?" The kindness and hospitality of the people of Machias will never be forgotten by anyone who attended the Josselyn Society meeting; instructors and students at the Tufts College Biological Laboratory did everything possible to facilitate my work at South Harpswell. I was able to add several species to the New England flora, and to get acquainted with others, either quite strangers to me

or only very slightly known; and I am convinced that many more are only waiting for me to call again and make their acquaintance.

Malden, Massachusetts.

THE DISTINCTIVE FEATURES OF IRIS HOOKERI.

J. Franklin Collins.

(Plate 39.)

In the February Rhodora[1] Dr. G. G. Kennedy records the finding of *Iris Hookeri*, Penny; at Cutler, Maine. On the second of July, 1902, Dr. Kennedy, Messrs. E. F. Williams, M. L. Fernald and the writer found an abundance of the plant at the station mentioned. Upon comparison with *I. versicolor*, which grew in close proximity, several important differences were noticed, which as emphasizing the distinctness of the species seem worthy of record.

I. Hookeri has narrower leaves with more prominent nerves, it is more strict and less glaucous than *I. versicolor*, and it grows in situations where the drainage is apparently better — e. g. along the edges of gravelly beaches and at the crests of the ocean cliffs where the plants are often subjected to baths of salt spray. The spathes are usually greener and appear to be inwardly falcate; really however, they are conduplicate, strongly pointed, and incurved throughout the upper part. At the base the plant is more or less purplish and often there are purple flecks scattered along the lower portions of the leaves.

In the flower and fruit, however, the most distinctive characteristics are found. In *I. Hookeri* the inner segments of the perianth (or petals) are totally different from the corresponding parts of *I. versicolor*. This contrast is well brought out in the accompanying plate, in which figures 4, 5, 6, and 7 represent petals of *I. Hookeri* and figure 8 a petal of *I. versicolor*, — all natural size. The petals in the former are not only very small and comparatively inconspicuous, but have their edges involute below or even rolled up so as to form a hollow tube-

[1] Rhodora, iv. 23 (1902).

like structure. These vary more or less but are seldom larger than represented in the plate, which shows three of the different forms noticed. The two petal-like lobes at the apex of each style-branch are in *I. Hookeri* usually spreading rather than slightly overlapping as was noticed to be the case in specimens of *I. versicolor* observed at Cutler.

The fruit of *I. Hookeri*, which matures fully two weeks earlier than that of *I. versicolor*, is broader, shorter, and thinner-walled. It is always beakless and is sometimes rather bluntly triangular while at others, especially when young, it is inclined to be sharply angled.

The plants grow in great abundance on the farm of Mr. W. R. Corbett of Cutler, who told us that since Dr. Kennedy called his attention to the two species last year he had been watching them and now had no difficulty in telling them apart, even in the dark, by simply feeling of the pods. It is not easy to imagine a more beautiful sight than that formed by thousands of these plants growing as they do along the summits of the cliffs, often making blue areas which can be seen for a long distance.

BROWN UNIVERSITY, Providence, Rhode Island.

EXPLANATION OF PLATE 39.— *Iris Hookeri*: fig. 1, flowering branch; fig. 2, leafy branch; fig. 3, bud; figs. 4, 5, 6, petals; fig. 7, side view of petal; fig. 9, young fruit; fig. 10, cross-section of the same; fig. 11, older fruit; fig. 12, cross-section of the same. *Iris versicolor*: fig. 8, petal.

NOTES ON VERMONT MOSSES.

A. J. GROUT.

SINCE the publication of the supplement to my Vermont Mosses I have spent two summers in the state and have collected copiously each season.

I have found several species not before reported from the state and have also been able to verify several of Frost's doubtful reports so that it seems probable that his list is entirely reliable.

The collections from Newfane have been of special interest to me as they are mostly from places familiar to me from childhood and over which I had passed times without number.

Species New to the State.

Fissidens incurvus Schwaegr. On stones in brook, Newfane.

Ditrichum vaginans (Sulliv.) Hampe. Newfane.

Orthotrichum sordidum S. & L. Butternut tree in dooryard, Newfane.

Bryum affine (Bruch.) Lindb. Mt. Holly, Eggleston.

B. pseudotriquetrum (Hedw.) Schwaegr. Willboughby, Faxon.

Thuidium microphyllum (Sw.) Best. Decayed log in moist woods, Newfane.

Amblystegium subtile (Hedw.) B. & S. Bark at base of maple tree, Stratton.

Hylocomium brevirostre (Ehrh.) B. & S. North exposure of Baker Brook Ravine. On rocks and soil, Newfane.

Hylocomium squarrosum (L.) B. & S. Cold swamps, altitude of 1500–2000 ft., Stratton, Stowe, Johnson.

Hypnum fertile Sendt. Rotten log, north exposure of Baker Brook Ravine.

From the descriptions I had supposed this species to be near *H. reptile*, but it is much more likely to be mistaken for *H. crista-castrensis* from which it differs in its more slender habit. Sterile it would readily be confused with *H. imponens* but it is lighter in color and has strongly curved capsules.

Hypnum fluitans var. *Atlanticum* Renauld in the Journal of Botany for August, 1901. This new variety was described from Britain and the continent so that this is the first and only collection from America. The specimens were collected in swampy places under the spruces near the Summit House, Mt. Mansfield. The original description and notes were reprinted in full in the March, 1902, Bryologist. The specimens were determined by M. Renauld.

Hypnum pallescens (Hedw.) B. & S. Bases of fir stumps and trees in mountain woods. Mt. Mansfield, Stratton. Closely allied to *H. reptile* and sometimes found growing in the same locality. But *H. pallescens* is a mountain species with shorter capsules, leaves less closely appressed and strongly secund at the tips of the branches.

Hypnum Patientiae Lindb. Nearly if not quite all of the Vermont mosses previously referred to *H. pratense* should be referred here. This species is not rare but is likely to be confused with *H. curvifo-*

lium because both have their capsules strongly costate when dry.

Hypnum uncinatum forma *plumosa* Sch. Det. Renauld. Stones in and near small rivulet, Baker Brook Ravine, Newfane.

Fontinalis Cardoti Ren. Det. Cardot. This is Mr. Pringle's specimen labeled *F. Lescurii*, Enosburg, June 18, 1880.

Dichelyma capillacea (L.) B. & S. Stems of *Cephalanthus* in swamp, Newfane. This was reported by Frost but no specimens could be found.

New Localities for Rare or Interesting Species.

[1] *Fissidens minutulus.* Damp rocks, Newfane.

Dicranum montanum. On rotten log, Newfane.

Schistostega osmundacea. Occurring in great abundance under the sill of an old shed on the underpining of stones and earth; Newfane. The protonema of our American *Schistostega* ends in flask-like cells, which I have not seen illustrated in any European work.

Leptobryum pyriforme. Not rare in damp shaded places. Basement wall north side of the old St. Joseph's College Building, Burlington.

Mnium orthorrhynchum. Moist ravine, Newfane.

Thelia asprella. On old apple-tree stump, Newfane. A careful search of the vicinity failed to discover another lot of this species.

Thuidium paludosum. Soil in Higbee Swamp, Burlington.

Amblystegium Lescurii. Stones in brook with *Fissidens incurvus*, Newfane.

Amblystegium irriguum. Stones in brook, Newfane.

Hylocomium Pyrenaicum. Newfane.

Hypnum cordifolium. Frequent in swampy mountain woods.

H. molluscum. On humus, Glebe Mt., Newfane.

H. ochraceum. Stones in brook, Stratton.

Plagiothecium Muellerianum. Crevices of ledges in ravine, Newfane.

Leskea nervosa. Base of trees in open woods, Newfane.

Plagiothecium turfaceum. Frequent in Newfane.

Brachythecium glaciale from Willoughby, Faxon, proves to be *B. reflexum.*

[1] Authorities as in my list of Vermont Mosses.

Eurhynchium strigosum so far collected in Vermont is var. *robustum* Roell.

Bryhnia graminicolor. Willoughby, Dr. Kennedy. Newfane.

Porotrichum Alleghaniense. Wet overhanging rocks, Newfane.

Rhynchostegium serrulatum. On soil, Higbee swamp, Burlington. Newfane.

Entodon repens. Newfane.

Pylaisia velutina. On trees, Stowe.

Homalia Jamesii. Not infrequent on cool shaded rocks in moist situations.

Leucodon sciuroides. Not uncommon.

Boys' High School, Brooklyn, New York.

SEED DISPERSAL OF VIOLA ROTUNDIFOLIA.

R. G. Leavitt.

At maturity the capsule of the violet slowly opens. Each of the three boat-shaped valves holds several smooth, hard, oval seeds. As the fruit dries and the sides of the valves draw together more and more strongly, the seeds are squeezed with increasing force. At length they escape from the pressure and are at the same instant thrown to a distance. The end seeds in each valve fly out first, according to Kerner, and the rest follow in orderly succession at intervals. The distance attained by the seed-missiles of this catapult fruit is given by the authority mentioned as a little over three feet in the case of *Viola canina*, for which alone figures are given. We have at present in the garden of native plants at North Easton a violet, *V. rotundifolia*, which puts Kerner's species to shame in this matter of seed dispersal. Young plants from the spring crop of self-sown seeds have now grown to such a size that they may be definitely recognized by the round leaf; and they form a living chart of the points to which the seeds were thrown. The parents occupy a pocket or small bed marked off by a circle of stones. In an adjoining pocket, within one or two feet of the home plantation, the offspring have come up freely. At a distance of a little more than 5 feet there are three seedlings. And there is one young plant 9 feet,

1 inch from the nearest adult of the species. It happens that all the seedlings are up hill from the original bed, so that water could not have furnished transportation. The arrangement of separating the pockets by lines of stones and the peculiar position of the farthest seedlings with reference to stones, exclude the garden rake as the dispersing agent. And finally, there are, within several miles of the spot, no members of the species except those in the pocket mentioned, so that the question of source is definitely settled. It seems clear, then, that *Viola rotundifolia* has the power of casting its seeds to a distance certainly of five, and very probably of nine, feet.

The process of expulsion may be watched if the ripe, unopened fruits are separated into their parts and laid on a table where they will dry. Results will follow within a relatively short time, within a few minutes if the capsules are already well prepared. In *V. rotundifolia* the middle of the three rows of seeds in each valve goes first. Some of the seeds are merely pushed out. Many are thrown less than a foot. Those that are caught in the right way between the jaws of the machine, or have the strongest attachments to the placenta fly the farthest. The intensity of the reaction is dependent largely upon the tenacity of the seed-stalk, which parts and releases the projectile only after the lateral, or oblique, pressure has become considerable.

The round-leaved violet is one of the earliest to bloom. After anthesis prostrate peduncles are put forth until past midsummer, bearing cleistogamus flowers. The capsules lie on the ground, hidden away under the leaves and often more or less buried beneath surface accumulations. When the performances of the earlier fruits had been noted, the question was naturally suggested whether these late pods have the same powers of projection, or whether owing to lack of use, this power, like the sight of cave fishes, has been lost. The answer was given at once, for all stages of the seed vessel from imperfect ripeness to barren age were found together. That answer is this. As the fruit approaches maturity the peduncle bends about midway. The capsule is withdrawn from its seclusion and elevated to a position about two inches above the earth, from which level the valvular catapults may work with advantage. The seeds are then expelled as in other cases.

The Ames Botanical Laboratory, North Easton, Massachusetts.

ANAGALLIS ARVENSIS AND CAERULEA IN VERMONT.

Alice E. Bacon.

In the summer of 1898 the writer of this note was told of a "pink chick weed" to be found on a terrace near her home. On investigating the matter she found a few scattered plants of *Anagallis arvensis* in that locality, and a few days later a single plant was found in a bed of pansies north of her house and two more in the lawn. Specimens were placed in her herbarium with date — July 28, 1898, and full notes.

Noticing a few weeks ago that the plant was not credited to Vermont in Mr. E. F. Williams' list in Rhodora for January she sent part of the herbarium specimen to Prof. L. R. Jones of Burlington, for identification, with the promise of fresh flowers if possible.

A few days later a lusty plant was found in a row of sweet peas, in ground that has been closely cultivated for years. Search was immediately made in the places where it had been found before and the plant was found in abundance on the terrace and nowhere else. It had increased in four years from a few plants to many hundreds, spreading the whole length of a high terrace, checked on the north only by the highway and on the south by cultivated land.

Specimens were sent to the Herbarium at Burlington and also to Mr. Williams. Growing with the *A. arvensis* were several plants bearing blue blossoms, which Prof. Jones identifies as *A. caerulea*; the plants are few as compared with the *A. arvensis* but both are evidently increasing rapidly and are thoroughly established. Although in the heart of the village the rather inconspicuous blossom and its habit of closing early and in cloudy weather has probably preserved it from destruction.

Still more recently *A. arvensis* has been reported from several places in this vicinity. Attention of flower-lovers was called to the plant, and several specimens were found in a strawberry patch on a farm about a mile distant from the first recorded station and brought for identification. Single plants were also gathered a mile or two from the village in different directions; they were smaller, less vigorous and fewer-flowered. The plant evidently has been spreading in

this section and probably will soon be reported from other places in the Connecticut Valley, Vermont side. Specimens of *A. arvensis* will gladly be forwarded to any Vermont reader of Rhodora upon application to the writer of this note. *A. caerulea* has not been reported except from the terrace of which mention has been made.

Bradford, Vermont.

ASTER UNDULATUS × NOVI-BELGII.

M. L. Fernald.

In October, 1900, Miss E. L. Shaw called my attention to an *Aster* found by her in a sandy thicket at Carlisle, Massachusetts, which presented a perplexing combination of the characters of *A. undulatus* and *A. Novi-Belgii*. Early in October, 1901, Miss Shaw showed me the spot where the *Aster* occurs, but, unfortunately, in the widening of the road much of the thicket had been temporarily destroyed and the tops at least of the *Aster* removed. However, roots of a plant which had been transplanted to Miss Shaw's garden furnished material which, in connection with that collected in 1900, shows very well the characteristics of the plant. In the neighborhood of the original station in Carlisle *A. undulatus* is abundant on the dry banks, while typical *A. Novi-Belgii* with strongly squarrose involucre covers extensive areas of meadow. The intermediate plant of the sandy roadside thicket has the pubescence of *A. undulatus*; and the leaves though less clasping, scarcely constricted at the base, and narrower than in *A. undulatus*, have the texture of that species, while they are shorter, broader and more toothed than in *A. Novi-Belgii*. In its branching the plant simulates *A. undulatus* more than *A. Novi-Belgii*. The involucre, however, is more often composed of strongly squarrose herbaceous bracts as in the most extreme form of *A. Novi-Belgii*. In some heads, nevertheless, the bracts are firm and appressed-ascending as in *A. undulatus*. All attempts to place this plant with either of the species to which it is closely related have led to the conclusion that it is equally close to the other. The limited area of the plant, its proximity to the abundant *A. undulatus* and *A. Novi-Belgii* and its decided mingling of the characteristics of these two very dissimilar species indicate that the plant is of hybrid origin. Its chief characters are:

Aster undulatus × Novi-Belgii. Stem tall, 7 to 9 dm. high, closely cinerious-puberulent especially above, bearing toward the summit many loosely ascending very leafy branches: leaves oblong or elliptic-oblong, dull and more or less puberulent on both faces; those of the main stem 3 to 6 cm. long, 1 to 2 cm. broad, acuminate at the tip, narrowed to a slightly clasping base; coarsely appressed-serrate near the middle: those of the branches numerous, much reduced, 0.7 to 1.5 cm. long, oblong to ovate, obtuse or acutish, subentire: heads few or solitary at the tips of the branches; the involucre 6 or 7 mm. high, the bracts in 2 or 3 series, either linear-lanceolate and firmly appressed-ascending, or with the outer recurved, or linear-attenuate, herbaceous, and mostly recurved-spreading: rays blue-purple. — Damp sandy thicket, Carlisle, Massachusetts, October, 1900 (*Miss E. L. Shaw*).

Gray Herbarium.

A Form of the Bitter Boletus.—The form of the Bitter Boletus (*B. felleus* Bull.) that grows on hemlock stumps is sufficiently familiar. In its small cap, comparatively slender, and markedly reticulated stem this form of the hemlock stumps departs from the usually generous and frequently huge dimensions of the species as it grows in rich woods. That the larger form may sometimes appear on stumps was shown at Alstead, New Hampshire, early in July and doubtless others have observed it. A specimen was found with a very stout stem that was swollen at the base and half covered with coarse reticulations, the walls of which have an imperfect hymenium. This answered to Peck's variety *obesus*, which is usually terrestrial. Its appearance during a very wet season in place of the smaller form suggests that the stout-footed form is not a variety in the strictly systematic sense — an observation applicable to numerous similar so-called varieties of fleshy fungi. In this specimen the angular and in some places compound pores were larger than in those of a neighboring small but mature specimen. In spite of a heavy rain the night before no viscidity, such as Professor Peck speaks of, was noted. Both stem and pore surface on being bruised assumed permanently a brown tint — the brown of dead leaves — which was strongest on the flesh colored spore surface. The flesh showed a slight tendency to turn pinkish — not always noticeable in dry weather, and the tubes became strongly flesh-color when the air and moisture were squeezed out of them.

Perhaps the only justification for offering a note on such a well-known species as *Boletus felleus* is the hope that it may emphasize the need of close observation of the variability of common and easily recognized species of fleshy fungi as a basis for the intelligent study of less common forms, the descriptions of which as recorded and fixed in type are often much too rigid and exclusive.— H. Webster, Alstead Centre, New Hampshire.

Virulence of the Wild Parsnip.—The following note on poisoning from contact with the juice of the Parsnip (*Pastinaca sativa*) may prove of interest. The writer was walking with a botany class along a Berkshire roadside, and attracted the attention of a farmer, who after some conversation on the various herbs growing near by, asked whether I knew that the Parsnip, which lined the roadside, was poisonous to handle. I replied in the negative, and shortly after when the farmer had left us, expressed my disbelief in the poisonous qualities attributed to the plant. To prove its innocence I broke off a stalk, let the juice collect and rubbed it hard across my wrist. During the rest of the walk nothing developed, and I thought that I had proved my case. Over night, however, a blister developed on the spot, preceded, I believe, by irritation, though of this latter point, I am not certain. The blister became large and did not subside for several days. After an interval of six years, a dark line on the wrist still serves to attest the truth of the farmer's observation.—Ralph Hoffmann, Alstead Centre, New Hampshire.

Annual Meeting of the Josselyn Society. — The Annual Meeting and Field Day of the Josselyn Botanical Society of Maine was held at Machias, July 8–11 inclusive, and proved a most successful and profitable season.

The days were spent in the field, the evenings with receptions, business meetings, and lectures. Merritt Lyndon Fernald talked on The Flowering Plants of the Maine Coast, describing the coast-line, the direction of the prevailing winds, and the effect upon the flora of the coast, explaining the geographic origin of our flora, and illustrating with characteristic plants of the extreme portions of the coast of Maine. Frank Shipley Collins spoke on The Sea Weeds of New

England, beginning with the structure of the algae, classification, etc., illustrating with specimens, and closing with instructions to amateurs as to the collection and preservation of the sea weeds.

Excursions were made from Machias to the lakes and bogs in the vicinity, and to the towns of Marshfield, East Machias, Whitneyville, Roque Bluffs, and Machiasport, including Buck's Harbor and Point of Main. On the Point of Main was found *Sedum Rhodiola*, a station not before recorded. *Mertensia maritima* grew in great abundance and beauty on the Point of Main, also at Roque Bluffs. At this latter station, *Arenaria peploides* (a very local plant in Maine) was found. Here also grows *Rubus Chamaemorus* and *Kalmia glauca*. *Senecio Robbinsii*, *Potentilla palustris*, *Centaurea nigra*, *Scheuchzeria palustris*, *Matricaria inodora*, and *Matricaria discoidea* were also recorded, and a double form of the wild rose, *Rosa lucida*.

The ground was covered in patches with the beautiful *Euphrasia Americana*, again with *Vaccinum Vitis-Idaea*, while other spots were carpeted with *Empetrum nigrum*, and the road-sides were fairly brilliant with *Leontodon autumnalis* and its variety *pratensis*. *Alnus viridis* was the common alder in this region, *Picea alba* and *Abies balsamea* were noticed in full fruit at five or six feet, and *Larix Americana* was everywhere seen.— Dora H. Moulton, Sec'y, 9 Hill St., Portland.

Field Meeting of the Vermont Botanical Club.— The eighth annual field meeting of the Vermont Botanical Club occurred July 3 and 4. Most of the preceding meetings have been in the mountain regions of the interior of the state, so Lake Champlain was chosen for exploration this year. Burlington was the headquarters and the small excursion steamer, Mariquita, was chartered for the two days that the less accessible islands and shores might be visited at will. The Vermont Bird Club joined in the outing and about forty members of these organizations participated. It was the unanimous verdict that it was the most pleasurable and profitable field meeting to date and the hope was generally expressed that at least one of the two days next summer might be given to a similar cruise to other places about the lake.

On July 3 the weather was threatening in the morning so the shorter cruise was made to the rocky wooded shores of Grand Isle and the sand flats at the mouth of the Au Sable river. The sight of

greatest interest was *Leucophysalis grandiflora* in full bloom at the first mentioned place where it occurs in an abandoned quarry. It is a beautiful plant worthy of general cultivation as an ornamental species were it easily propagated. A comparison of experiences led to the conclusion that this may present some difficulties but it is to be undertaken by some of our members. It evidently behaves in nature as some of the orchids, appearing in great profusion in certain seasons and nearly disappearing in others.

On July 4 the weather was ideal and the full day and early evening were spent in a longer cruise from Burlington southward with landings at Thompson's Point, Gardiner's Island, Fort Cassin, and a cruise up the Otter Creek to Vergennes. The greatest interest of this day centered upon Gardiner's Island — made locally famous years ago by Mr. C. G. Pringle's explorations. It is one of the most interesting botanical areas in the State, consisting of an island of but few acres off the mouth of the Little Otter Creek. It is the home of fine specimens of *Quercus Muhlenbergii*, thickets of *Staphylea trifolia* and *Viburnum pubescens*, together with *Physostegia Virginiana* and other plants unusual in Vermont. Fortunately the island is uninhabited except perchance by an occasional fisherman and the natural flora has remained almost undisturbed by man. It was suggested that an organization be formed in connection with our club to secure by purchase or gift this and similar areas of peculiar botanical interest that their preservation in the natural state may be insured to succeeding generations of botanists. In many cases at least the expense would be slight in proportion to the gain to botanical science. — L. R. JONES, University of Vermont.

Vol. 4, no. 44, containing pages 150 to 170, was issued 9 August, 1902.

Iris Hookeri, figs. 1–7 and 9–12. I. versicolor, fig. 8.

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